

	12x	2	<i>Timutua</i>
	16x	1	<i>Timutua</i>
$x = 7$	4x	3	<i>Eurhinotropis, Hebeclada, Timutua</i>
	8x	1	<i>Timutua</i>
	12x	1	<i>Timutua</i>
$x = 8$	2x	1	<i>Monninopsis</i>
$x = 10$	4x	1	<i>Timutua</i>
$x = 15$	2x	1	<i>Microthrix</i>
	4x	1	<i>Microthrix</i>
$x = 17$	2x	3	<i>Monninopsis, Timutua</i>
	4x	4	<i>Timutua</i>
$x = 23$	2x	1	<i>Timutua</i>

SYNTHESIS OF ASTER HERVEYI

LEONARD J. UTTAL

Long suspected to be a hybrid between *Aster spectabilis* Ait. and *A. macrophyllus* L.¹, *A. Herveyi* Gray can now be reported as so in fact. The putative parents have been artificially crossed and resulting progeny compare satisfactorily with naturally occurring *A. Herveyi*. Subsequent reference to this plant will be as *A. × Herveyi* Gray.

A. spectabilis is a coastal plain species from Massachusetts to South Carolina². *A. macrophyllus* is a species of the eastern North American upland. The two are allopatric except in a few counties of southeastern New England and eastern Long Island. Here the two ranges impinge ecologically and physiographically, and here occur the hybrid swarms of *A. × Herveyi*. A specimen from Plainfield, New Jersey collected in 1909, now in the New York Botanical Garden Herbarium, indicates that sympatry between the parent species existed in parts of the New York metropolitan area before its development.

A. spectabilis and *A. macrophyllus* are both present in the

¹Fernald, M. L. 1950. Gray's Manual of Botany, 8th. Ed.: 1430.

²Southern limit based on information from North Carolina herbaria. (Harry E. Ahles, pers. com.)

vicinity of Sag Harbor, Suffolk County, Long Island. *A. × Herveyi* occurs here in colonies among which there is a central clone of robust plants surrounded by smaller clones of plants of diminishing stature. Apparently introgressive clones occur consisting of plants intermediate between the hybrid and either of the parents. These can not be assigned satisfactorily to any category involved. Marked variation in vegetative vigor is evidenced by different clones in similar sites. The hybrid swarms of Long Island are similar to those on the mainland as reported by Hervey³.

The intermediate nature of the hybrid is most graphically manifested by the basal leaves and the similar ones of the characteristic vegetative tufts. In *A. macrophyllus*, these leaves are quite large, ovate, serrate or crenate, cordate, and long-petioled. In *A. spectabilis*, comparative leaves are much smaller, lanceolate to narrowly ovate or obovate, entire or remotely serrate, the blade tissue gradually tapering to the short petiole. In *A. × Herveyi*, these leaves are variously intermediate in size, broad to narrowly ovate, serrate or crenate, with the blade rounded to the petiole. The blade is sometimes subcordate or cordate, in which case, blades with rounded bases are prevalent on neighboring plants.

Characters of the *A. macrophyllus* parent seem to predominate in the hybrid: leaf serration, naked petioles, usually appressed involucre bracts. Perhaps for this reason, extremes of *A. macrophyllus* have, on occasion, been called *A. Herveyi*.

Sometimes the squarrosity of the involucre bracts of *A. spectabilis* comes through slightly in hybrids. In such cases, it tends to be accompanied by the deep purple-blue and long rays characteristic of *A. spectabilis*.

The *A. spectabilis* parent used in the artificial crossing experiment originated in Riverhead, Suffolk County, Long Island, New York. The *A. macrophyllus* parent, of the typical variety, originated from Main Top Mountain, Amherst County, Virginia. Crossings were made in my garden in Madison Heights, Virginia. The *A. spectabilis* was planted

³Hervey, E. W. 1916. *Rhodora* 18: 183-184.

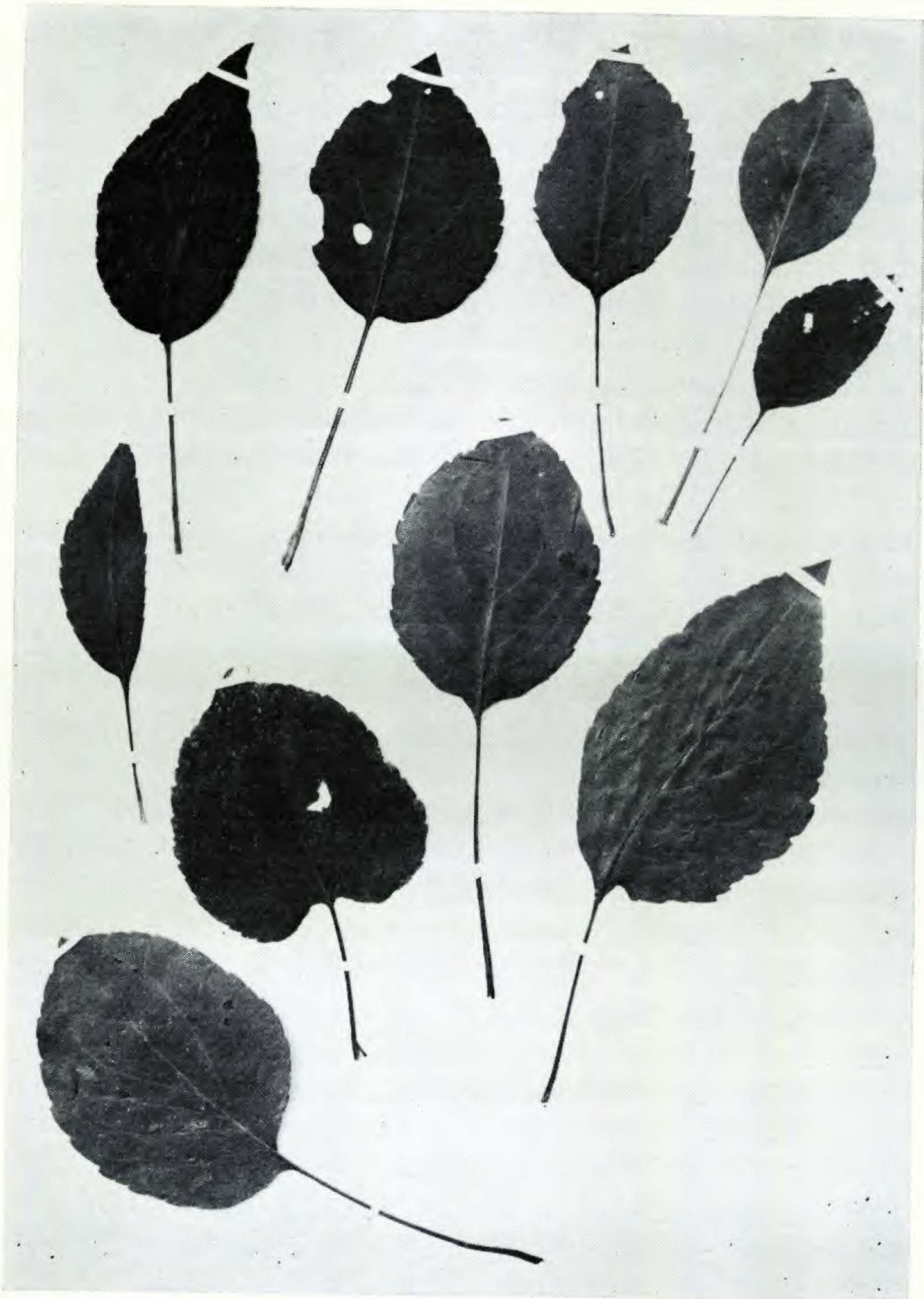


PLATE 1267. Representative leaves from the vegetative tufts of synthetic *A. × Herveyi*. The range of naturally occurring variation is artificially duplicated.

in the ground while the *A. macrophyllus* was kept in a pot for mobility. Both were kept in individual cheesecloth tents to prevent entomophilous contamination of heads.

Working on the presumption that both putative parents are self-incompatible (other *Aster* species tested are⁴, and populations of parent species are characteristic of out-breeders), flower heads of both were pressed together to effect pollination. These heads produced abundant plump achenes. Certain heads not pollinated and left to themselves produced only shriveled achenes.

Ripe achenes were sown in flats kept outdoors over winter. Sprouting was sparse in late fall; abundant the following April. Eight F_1 plants bloomed the first fall (1961) and were made into herbarium sheets. Seven of these, with a sheet each of the parents, were sent to the Gray Herbarium for preservation. An eighth F_1 sheet was sent to the New York Botanical Garden Herbarium. Many additional F_1 plants, vegetative in 1961, are expected to bloom in 1962. Specimens of these can be supplied upon request.

The high degree of variation prevailing in progeny resulting from multiple crossings of the same parents indicates highly complicated parental genetic makeup. This is in keeping with the extensive variability of the parents, especially of *A. macrophyllus*.

Tests of F_2 seed will have to wait another season. Observations from the field indicate F_1 fertility is impaired.

For a genus with so many sympatric outbreeding species, in an era of so much disturbed habitat, *Aster* has a remarkable paucity of described hybrids. This is an area meriting closer inspection; perhaps it is the key to better understanding of certain "difficult" taxa.

To the venerable naturalist of Orient, New York, Mr. Roy Latham, for introducing me to the Long Island hybrid swarms, and for supplying me with *A. spectabilis*; to Dr. Reed C. Rollins, Director of the Gray Herbarium, for verifying my work, to Mr. Joseph Monachino, of the New

⁴Fryxell, P. A. 1957. Bot. Review 23 (3): 169.

York Botanical Garden, and Dr. Harry E. Ahles, of the University of North Carolina Herbarium, for valued assistance, I express my sincere appreciation.

— MADISON HEIGHTS, VA.

THREE MISIDENTIFIED SO-CALLED CORDILLERAN SPECIES IN EASTERN NORTH AMERICA¹

EILIF DAHL

Since the work of Fernald (1925) the cordilleran species in eastern North America have attracted considerable attention. With increasing exploration, especially of the formerly little-known areas around Hudson Bay and the Canadian Arctic Archipelago, many species previously considered as cordilleran disjuncts have been shown to have a more or less continuous area across the continent (Raymond, 1950). Many of the remaining cordilleran disjuncts are serpentinicolous species, halophilous species or species with adaptations to long-distance dispersal (light wind-dispersed spores or seeds, hooks on the fruits, etc.). Only a very limited list of species with no adaptations to long-distance dispersal remains as cordilleran disjuncts and it will be shown below that the records of three of them are based upon misidentifications.

1. *Agrostis rossae* Vasey was reported from Newfoundland at Bonne Bay by Fernald (1933 p. 203) based on a specimen collected by K. P. Jansson. The specimen is kept in the Gray Herbarium and consists of two culms, 18 and 20 cm. high, and attached basal tufts of leaves, the leaves being about 1 mm. broad. Dead leaves from the previous year testify the plant to be perennial thus corresponding to the Rocky Mountain *A. variabilis* Rydb., the name *A. rossae* Vasey being reserved for an annual plant restricted to hot springs in Yellowstone Park, Wyoming (Chase 1950 p. 342 and 346). The panicle is narrow, almost spikelike, with

¹Contribution from the Herbarium of the University of Colorado Museum.